

This Indenture of two parts, made this first day of September in the year Eighteen hundred and sixty, by and between the City of Cambridge, a body corporate duly established under the laws of the Commonwealth of Massachusetts, of the first part, and William A. Norton and William A. Hendrick, both of East-Boston, in the County of Suffolk in said Commonwealth, Bridge-Builders, of the second part,

Witnesseth -

That the said Norton and Hendrick, in consideration of the promises and agreements of the said City of Cambridge, hereinafter contained, do, for themselves, and their Executors, and Administrators, promise and agree to and with the said City of Cambridge, that they, the said Norton and Hendrick, shall and will build and finish, in a good, substantial and workmanlike manner, so much of the pile bridge and draw as falls to the City of Cambridge, in the rebuilding and widening of Prison Pond Bridge, between the draw opening in the present Bridge and the sea-wall, or abutment, which has been recently built a short distance southerly therefrom, it being a piece of Bridge 50 feet wide, and about 14.3 feet long on the westerly side and about 71.2 feet long on the easterly side, with one half part of a leaf draw reaching 16 feet beyond the northerly end of said Bridge.

The piles shall be of oak, sound, straight, good and sufficient. They shall be not less than 14 inches in diameter at one third their length from the larger end, and 9 inches at their smaller end. They shall be driven at the points indicated on plans made by Thomas Loring, and dated June 1860, in a skilful manner to a good bottom, and of such lengths as not to waste their butts.

The tops of the piles in the two extreme pairs shall be sawed off, in a level with the bottom of the stringers at such grade and height as may be directed by the Engineer in charge.

They shall be trimmed down on each side 14 inches to shoulders, leaving a thickness of 10 inches in the top of the piles, and on each side shall be fitted 6x14 inch white pine girders.

They shall be fastened in each end of each piece of girdled and at every contact with a pile, with one inch screw bolts, passing through the heart of the piles and both girders, the bolts being 22 inches long, wood to wood.

The girders shall be in lengths of 19 and 30 feet, breaking joints with one another on the opposite sides of the piers.

The tops of the piles in the three intermediate piers shall be fitted and furnished in the same manner as the above, but 14 inches lower down.

The fender piles shall be fitted up to the main piles and stringers in a proper manner and shall be tenoned into the fender caps. They shall be fastened to the main piles with 1 1/8 inch screw bolts, and to the outside stringers with one inch screw bolts.

The fender piles shall incline at right-angles to the bridge, two inches in a foot.

There shall be spur shores to each main pile in the Southernly pier, bracing towards the abutment-as much as practicable, and fitted and fastened as shown on said plan, at about half tide height.

In case it shall prove impracticable to put the spur shores in the places indicated on said plan, they shall be moved to the adjoining pier.

Each pier of piles shall be furnished on each side, except as shown on said plan, with low water oak girders 8x10 inches, in lengths of 20 and 33 1/2 feet, breaking joints on the opposite sides of the piers. They shall be fastened to each pile with 1 1/8 inch spike bolts, 15 inches long. They shall be put on at a low run of tides, and as low down as practicable.

The piers shall also be furnished on each side, except as shown on said plan, with two oak bices, 6x8 inches, in lengths from 26 1/2 to 20 feet, arranged as shown on said plan and fastened to each pile with 1 1/8 inch spike bolts 15 inches long.

The three intermediate piers shall be furnished on each main pile with a bolster from 6 to 8 feet long as shown on side plan, cut from 12 x 14 inch white pine timber, so as to stand edgewise. They shall be accurately fitted without notching to the girders and heads of piles and fastened down with an inch screw bolt running through each girder.

The bridge seat in the abutment shall be furnished with a stringer sill, 8 x 14 inches, well fitted to the masonry, its top surface being in the plane passing through the tops of the girders on the two extreme piers and the tops of the bolsters on the three intermediate piers.

The bays between the abutment and 5th piers shall each be spanned by 9 white pine stringers 12 x 14 inches, set edgewise and abutting over the centre of the bolsters, except as shown on side plan. Where they rest in the bridge seat they shall be fastened down with one inch spike bolts 21 inches long. On the two extreme piers the stringers shall be fastened to each girder with one inch screw bolts, 20 inches long, and on the three intermediate piers to each bolster, as near its centre as practicable, with two one inch screw bolts 20 inches long.

The side stringers between the abutment and 5th piers shall be so placed as to measure from out to out 49 feet. Upon these, and breaking joints therewith, shall be placed fender caps 12 x 12 inches. They shall project over the stringers 6 inches, so as to measure out to out 50 feet, and shall be fastened to them once in 4 feet with one inch spike bolts 20 inches long. They shall also be fitted to the tops of the fender piles with proper tenons mortises and pins.

Upon these fender caps shall be placed other caps of white pine 12 x 12 inches in random lengths of not less than 20 feet. They shall be placed flush with the fender caps and be spiked to them once in 5 feet with 7/8 inch bolts 20 inches long.

The stringers shall be floored over with 6 inch white pine plank fastened with 12 inch wrought-iron spikes to each stringer.

The pine timber shall be of good merchantable quality free from cross grains or knots that shall be prejudicial to durability or strength, & square edged.

The screw bolts shall all be furnished with steel heads & nut washers.

The fenders and finishing caps shall be secured from the outward pressure of the earth covering by curved back metal knees placed 8 feet apart, lengthwise of the bridge.

The knees shall be 6 inches thick and 4 feet in the larger arm. They shall be nicely fitted to flooring and caps, they shall be spiked through the neck to the 12 x 14 inch stringers with 7/8 inch bolts 22 inches long, and fastened to the flooring with a 7/8 inch screw bolt near the end of the larger arm.

The upper or finishing caps shall be bolted to the shorter arm with a 7/8 inch screw bolt.

The railing is to be made according to the plan, of white pine and each post is to be fastened to the two caps with two 12 inch spike bolts.

The 6 inch plank flooring shall be covered with clay or flats mud of good quality, as the Engineer in charge may direct, to the depth of 14 inches, care being taken also to cover the knees entirely.

The mud shall be covered with good clean gravel to the depth of 8 inches.

The piles for the draw pier shall be driven as shown on said plan. From the pier next to the draw opening the best, largest, and straightest piles shall be selected. The two extreme piles shall have each a spur shore leaning towards the draw opening and another leaning outward from the bridge, the two to be fastened to the main pile at different heights.

This pier shall have two sets of oak girders 6×10 inches, on the sides next to the draw opening, one fastened at extreme low water, the other at common high water, with $1\frac{1}{8}$ inch spike bolts 15 inches long and the space between and above to the cap shall be filled up with three inch spruce plank thoroughly fastened on.

The piers shall be capped with 12×14 inch board pine, in two pieces only and shall be covered with another of the same dimensions in not more than two pieces, and breaking joints with it. The two shall be fastened together with one inch screw bolts 24 inches long, once in 3 feet.

The main piles in the other draw piers shall each have a spur shore leaning from the draw and they shall be fastened up to the main piles at about half tide height with $1\frac{1}{8}$ inch screw bolts.

These main piles shall be capped with 14×14 inch board pine, in not more than two pieces, with an oak boster at the pile at the joint.

Each of these main piles shall be fastened to the corresponding piles of the adjoining or 5th pier of the bridge with a $1\frac{1}{8}$ inch screw bolt.

The bay between the two draw piers shall be spanned by 20 stringers 6×14 inches and 2 stringers 12×14 inches, of white or yellow oak, arranged as shown on said plan. They shall be fastened to each cap with an inch spiked bolt 22 inches long.

The draw stringers shall be of white or yellow oak of the best quality, and there shall be 8 of them, each 27 ft 10 inches long. The six inside ones shall be placed 4 ft 2 inches apart, centre to centre, and the two outer ones equidistant from the others and so placed as to be 30 ft 6 inches apart.

At the larger end they shall be 14 inches deep for a length of 11 feet 10 inches, tapering them to a depth of 10 inches at the smaller end and straight on the tops.

They stand in 14 inches wide at the top and are being
with length to a width of 8 inches at the other end being

straight on each side.

The drum stinger stand to long between the 6 x 14 inch side
stinger, as shown on the plan at point 10 feet from their
larger end and 5 inches from their upper surface, and all
inches to be from the inner face of the drum caps.

They stand on the plan at their smaller end to a small piece
of hard pine 6 x 15 inches and 31 1/2 feet long by two small
bars and another and secured to it by two 3/4 inch pins

small bars with square heads, nuts and plates.

The stinger upon which the drum stinger and being stand
be of wood 1 3/4 inches square, 16 7/8 inches long having flanges
3/4 inch and flange bar in on each side and secured by two
3/8 inch bars. The frames of the stinger stand to 1 5/8
inches diameter running in each end three set into the
adjoining stinger as shown on side plan.

The larger ends of the drum stinger stand to be secured to a
cast iron bearing frame as shown by side plan.
The drum stand to 31 1/2 feet long, 10 5/8 inches square and
stand upon 10 x 10 inch. The stand to of good quality of iron
cast in 4 pieces with flange bars to join them to the
stinger and to each other with 1 1/8 inch square bars, and
to be made according to plan.

The stinger for lifting stand to of round 3 inch iron being
in 5 days from underneath the 6 x 14 inch side stinger
there being a big set-back end of the drum stand and in
the middle of the stinger.
The drum stand to 6 inches in diameter and ground
for the lifting stand. The crude stinger stand to arranged so
that the lifting operation can be done out of gear.

The planing of the drum and the long adjoining stand to
in two thicknesses bearing joints.
The first stand to of 3 inch wide pine piece 30 1/2 feet long.

with jointed edges and each fastened to each stringer with 7 inch wrought-iron spikes.

The other thickness of plank shall be of 2 inch spined, laid close and well fastened.

There shall be flops in the flooring, with proper hinges and handles.

The hoisting posts shall be of white pine 26 feet long, 12 x 12 inch and fastened to the main piece, immediately adjoining the draw on each by proper bolts and straps.

They shall have in their tops suitable sheaves of iron and near the bottoms chocks and sheaves of iron for the hoisting chains.

The standing part for the man at the cranks is to be arranged as shown on the plans and is to be surrounded with a light railing to protect passengers. The cog-wheels shall be boxed in as usual.

The cross beam to the draw stringers shall have an eye for the hoisting chains fastened to it at each end by a strap passing around it.

Otherwise the hoisting apparatus shall be of the pattern of that used on the Craigie Bridge and of good quality in all respects.

The railing is to be made according to the plans of white pine, and each post is to be fastened to the caps with two spiked bolts.

The railing on the draw is to be lighter than that on the bridge, the posts being of 2 inch plank, and rails of inch boards.

The timber shall all be of good quality free from cross grain or knots that shall be prejudicial to durability or strength and square edged.

The screw bolts shall all be furnished with stout head and nut washers. The lengths given here are from wood to wood.

The building of new pile bridge and draw shall include the removing of the old bridge and the furnishing of all the needed

timber, iron, labor, machinery, clay or mud and gravel and what ever else may be necessary to finishing in a proper manner said bridge and draw.

The work is to be done in conformity with said plans furnished herewith and under the superintendence and to the acceptance of George W. Fifield, the Superintendent of Streets.

The work upon said bridge is to be begun forthwith and finished on or before the first day of November, A.D. 1860.

The said Norton and Hendrick shall not be excused, except by permission of the Committee hereinafter mentioned.

And in case of failure of said Norton and Hendrick to perform their contract or if, in the opinion of the said Superintendent, there is no probability that the contract will be performed, the said Committee may, on behalf of said City, at its option, procure other parties to finish the work, and award to said Norton and Hendrick such compensation as the said Superintendent may deem reasonable for the work done by them, less the damage occasioned by detention or otherwise; it being expressly declared and understood that the said Norton and Hendrick are responsible and will be held accountable for any and all losses, extra costs and damages by reason of detention in any way occasioned by their non-performance of this contract.

Any extension of time desired by either party must be obtained of the other party in writing, and may be given at their discretion.

In consideration of the fulfillment by said Norton and Hendrick of the provisions of this agreement, the said City of Cambridge hereby promises and agrees to pay or cause to be paid to said Norton and Hendrick, their heirs, executors, administrators or assigns, the sum of Three Thousand Four Hundred and Fifty-five Dollars, in annual payments to wit: upon the first day of October next such a sum as shall be due for the work already done and the materials furnished, according

to the certificate of said Superintendent; Provided, however, that such certificate shall not be given for more than eighty per cent. of the value of such labor and materials, and the balance shall be paid when the work shall have been fully finished, as before written, to the acceptance of said Superintendent.

In witness whereof, the said City of Cambridge has caused its corporate name to be subscribed and its common seal to be affixed hereto by John B. Atwell, Samuel Stocomb, Israel Tibbatts, Albert Stevens and J. C. Farnham, the Committee on Roads and Bridges of the City Council of said City, for the current municipal year, thereunto duly authorized by a vote of the City Council, and the said William A. Norton and William A. Kendrick have hereunto set their hands and seals the day and year first above written.

In presence of

Geo. W. L. Field
R. Litchfield

J. B. Atwell
S. Stocomb
Israel Tibbatts
J. C. Farnham
Albert Stevens

Committee on Roads
and Bridges



W. A. Norton

William A. Kendrick



Contract with 35

Norton & Kendrick

Prison Permit Bridges

Sept. 1, 1960.